prompted us to describe the course of partial diabetes insipidus. It was diagnosed by a water-deprivation test in a boy with biopsy proven LCH.

There was spontaneous regression concomitant with a decrease in the width of the previously thickened stalk on MRI.

The initial symptoms of polyuria and polydipsia had disappeared in this patient even before biopsy from the one single osteolytic defect in the frontal convexity was done. External irradiation was given only to the lytic defect. The pituitary received no irradiation and thus the changes mentioned above were accepted as spontaneous.

Dunger et al. [2] reported complete spontaneous recovery of posterior pituitary function in a patient with LCH. In our patient, repeat water-deprivation test, done after irradiation and in the absence of polyuria and polydipsia, has shown that the renal concentrating capacity was completely recovered but the posterior pituitary function, as indicated by a plasma arginine vasopressin (AVP) level, low in relation to urine osmolality [3], was still not normal. Nevertheless, our experience with this patient indicates, for the first time to our knowledge, that spontaneous recovery of urinary concentrating capacity during the course of LCH may be associated with a spontaneous improvement of MRI changes.

As we had not measured the plasma AVP level during the initial water-deprivation test, we do not know if the recovery of urinary concentrating capacity is a reflection of increased, albeit still low, AVP secretion. Although the concomitant improvement on the MRI suggests that this might be the case, the increased sensitivity of renal vasopressin receptors [4] might also be an explanation for the recovery of urinary concentrating capacity.

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Reply

Dr. Ercan et al.'s interesting case of spontaneous regression of diabetes insipidus in a patient with LCH illustrates the importance of thorough documentation of the disease both biochemically and by MR imaging.

Historic reports of diabetes insipidus responding to radiotherapy could equally have been spontaneous regression as many of these patients did not have biochemical or imaging studies. They were treated on clinical grounds when they developed thirst and polyuria.

In the series reported by Dunger [1] and in our series to which Dr. Ercan et al refer, the maximum urine osmolality after a short (7 hr) period of water deprivation together with measurement of urinary arginine vasopressin showed good discrimination between normal, partial, and non-function of the posterior pituitary. This test can be administered as an out-patient, it is completely non-invasive and is tolerated well.

A large prospective study of newly diagnosed LCH patients measuring these parameters at regular intervals together with gadolinium enhanced MR imaging would determine the incidence of partial DI (maximum urine osmolality 600–800 mosmol/kg; urinary AVP 30–90 pmol/l) and document its natural history. It would allow determination of the incidence of spontaneous regression and answer the question whether complete DI (maximum urine osmolality <300 mosmol/kg; urinary AVP <30 pmol/l) is ever reversible. Such a study has been proposed in the report of the Histiocyte Society's Workshop on CNS disease in LCH [2].

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Letter to the Editor: "Bone Pain Palliation With Strontium-89 in Children"

We read with interest the article by M. Charron et al. entitled ''Pain Palliation with Strontium-89 in Children with Metastatic Disease,'' published in *Medical and Pediatric Oncology* in June 1996 [1]. Strontium-89 (89 Sr), a beta emitting radioisotope with a specific uptake in bone, is generally employed for the palliation of metastatic bone pain in prostatic or breast cancers. The article reports the first cases of using 89 Sr in two children.

One patient had metastatic pulmonary carcinoma but only minimal increased uptake on bone scan. The authors recognize that the biodistribution of strontium is similar to 99mTc-MDP, thus, the failure of the treatment was predictable in that case.

The other patient was an 11-year-old boy with a stage IV neuroblastoma. Neuroblastoma is among the most common malignant neoplasms in childhood [2]. Since the early 1980s, the detection of neuroectodermally derived tumors has been greatly facilitated by the introduction of meta-iodobenzylguanidine (MIBG), an aralkylguanidine noradrenaline analogue [3,4]. Once iodinated with I-131 or I-123, mIBG has been shown to be highly sensitive (90–95%) and specific (100%) for the localisation of neuroblastoma lesions [5]. Furthermore, the great majority of authors claim that mIBG scintigraphy is more sensitive than bone scan for the detection of osseous and bone marrow involvements in neuroblastoma [6,7].

The high tumor affinity allows the therapeutic use of the 131I labelled mIBG [8]. The effectiveness of the treatment of neuroblastoma with 131I-mIBG is not only on bone pain palliation, like bone-seeking beta-emitting radionuclides such as 89 Sr, but encouraging results in term of partial or complete remission were reported in many clinical trials [9–12].

As mIBG is now widely available and commonly used, this exam, which reveals skeletal as well as soft tissue involvements, should be first performed in the diagnosis and follow-up of neuroblastoma. In the same manner, the potentiality of mIBG therapy in term of subjective as well as objective effects, should be better explored in neuroblastoma patients.

Therefore, even if the article [1] reports the first use of 89 Sr in children, the utility of the administration of that radioactive compound is questionable in both cases.

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Reply

We thank Drs. Giammarile and Chauvot for their interest in our paper, and for their review of the basics of nuclear medicine physics. We would like, however, to emphasize some features that were overlooked. From a radiation protection perspective iodine-131 is significantly more tedious to handle, and thus potentially more noxious than strontium-89; this is illustrated in the United States by stringent regulations that require patients who receive iodine-131 to be hospitalized when the dose of iodine-131 delivered is above 30 millicurie.

There are no such limitations or regulations with strontium-89 and thus patients can be released immediately. Side effects and complications of MIBG-I^{131} are also more severe; hematological toxicity continues to represent a limiting factor [1] especially in children with extensive bone marrow metastasis in whom bone marrow depression can be severe [2]. A recent study disclosed that MIBG-I^{131} had a sensitivity of only 50% for depiction of site of relapse [3]. Therefore one could predict that the therapeutic response would be even less in this group of patients. In terms of the efficacy of MIBG as a therapeutic agent, out of 95 patients reported in six different studies [4–9] only five had a complete response and 16 a partial response. In virtually all these patients bone marrow toxicity was observed and in some was manifested as severe thrombocytopenia (platelet level less than 25,000 per μL), and occasionally marked leukopenia was also present. A few patients developed renal and liver toxicity. Recently, a case report of hepatic necrosis was added to the list of complications [10]. Conversely, strontium-89 has been documented, in many prospective multi-center clinical trials, to be efficacious for pain palliation in adults with metastatic bone disease. The next logical step was thus to use this agent in children with metastatic disease to the bone. This was our goal and we intend to use it again in a prospective clinical trial in children with other neoplasia known to metastasize to the bone such as osteosarcoma, Ewing sarcoma and other tumors. We are puzzled that Drs. Giammarile and Chauvot question the utility of strontium-89 when we reported a successful outcome. Additionally, this child had lung cancer, and MIBG has no affinity for this neoplasm. In our opinion, it is counterproductive to be reluctant to accept a new treatment modality, regardless of what else is available. MIBG-I^{131} is not available for therapeutic use in the United States. The efficacy of MIBG-I^{131} is dubious and whether it will improve the prospect of cure remains to be seen [11]. Until MIBG-I^{131} is well accepted by the medical community, is readily available and is part of the armamentarium available to the physician, strontium-89 remains a better agent for palliation of pain in children and adults with metastatic bone disease.

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